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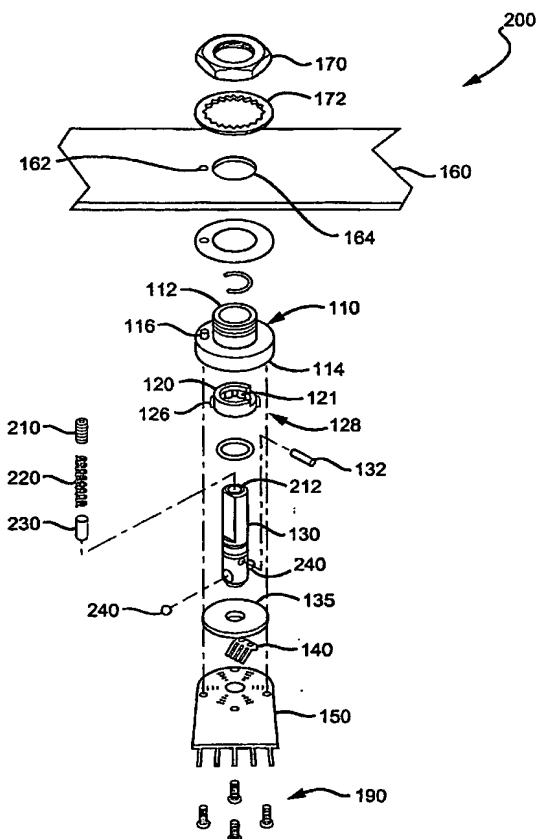
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[Continued on next page]

(54) Title: **LOW PROFILE ROTARY SWITCH WITH DETENT IN THE BUSHING**



(57) Abstract: A panel mounted low profile rotary switch (100) contains a detent mechanism (120) mounted in a bushing (110). In a preferred class of embodiments, the detent sub-assembly comprises a single spring (220) positioned in parallel within the vertical extending shaft (130). The force exerted by the spring is manually adjusted by a set screw (210) to provide the desired downward applied vertical force on a plunger (230). The plunger, preferably a pointed cylinder, applies pressure to detent balls (240) causing the detent balls to move radially outward and engage rotor cams located on the inner surface of the detent mechanism.



European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Published:**

- with international search report
- with amended claims

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US03/22523

**A. CLASSIFICATION OF SUBJECT MATTER**

IPC(7) : H01H 19/00, 21/00; G05G 5/00

US CL : 200/296,336; 74/527

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 200/11r, 11d, 11da, 11g, 295, 296, 335-337, 53-574; 74/527

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)  
EAST**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4,551,587 A (ROSE) 05 November 1988 (05.11.1988) Note detent subassembly 22-25 in Fig. 1 and panel 2 located between lower portion 5,6 and upper portion 4 of housing or bushing component 1 in figure 2. Note column 1, line 60 to column 3; line 28.	1,4,5,6;12-14
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Y		2
Y	US 6,043,855 A (GRAVE) 28 March 2000 (28.03.2000) Figure 2, knob 105.	2
A	US 4,112,282 A (PIBER) 05 September 1978 (05.09.1978) Bushing 12, upper portion 36,32; panel 52; bushing lower portion 12,12a noting figures 6-11. and column 5, line 5 to column 6, line 64.	1-14
Y	US 3,560,672 A (LUDLUM et al) 02 February 1971 (02.02.1971) Rotary switch shaft 14 with attached knob 92,94 noting figures 1 and 2.	2
A	US 5,862,715 (LEMIRE) 26 January 1999 (26.01.1999) Vertical spring 124,154,188,260 of the detent assembly located in bore parallel to the shaft.	1-14
A	US 4,490,588 A (GUENTHER et al) 25 December 1984 (25.12.1984) Detent assembly 11,15-17 and bushing 2 noting figure 2.	1-14

☐ Further documents are listed in the continuation of Box C.☐ See patent family annex.

* Special categories of cited documents:	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"E" earlier application or patent published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family
"P" document published prior to the international filing date but later than the priority date claimed	

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**INTERNATIONAL SEARCH REPORT**

PCT/US03/22523

**Continuation of Item 4 of the first sheet:**

The title does clearly described the focal point of the invention. The suggested new title is as follows:

**--ROTARY SWITCH WITH MANUALLY ADJUSTABLE DETENT MECHANISM WITHIN THE BUSHING INCLUDING  
VERTICAL SPRING, PLUNGER AND DETENT BALLS--**